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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,835

08/07/2006

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12/09/2008

EXAMINER

AUNG, SAN M

ART UNIT

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3657

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/551,835	<b>Applicant(s)</b> HIRONAKA, AKIHIRO	
	<b>Examiner</b> SAN AUNG	<b>Art Unit</b> 3657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

This communication is a First Office Action Non-Final rejection on the merits. Claims 1 and 2, as originally filed, are currently pending and have been considered below.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1 and 2** are rejected under 35 U.S.C. 103(a) as being unpatentable over Motozaki A. et al. (JP 11-13840) and further in view of Wujick (US Patent 4,403,979).

**As per claim 1**, Motozaki A. et al. discloses a skew toothed belt but fails to explicitly disclose denoting a tooth pitch as "Pt", a tooth helix angle as " $\theta$ ", and a belt width of said helically-toothed belt as "W", said tooth helix angle " $\theta$ " is set in a range of

$$-0.2 \leq 1 - W \cdot \tan \theta / Pt \leq 0.75.$$

However Motozaki A. et al. disclose about backlash between said helically-toothed belt and said helically-toothed pulley is small (Paragraph 38).

It would have been obvious to one ordinary skill in the art at the time the invention was made to modify the pulley and belt system of Motozaki A. et al.

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according to the desire helix angle of helical belt and in order to provide optimal performance. (See MPEP 2144.05 (II)).

As per claim 2, Motozaki A. et al. discloses all the structural elements of the claimed invention but fails to explicitly disclose denoting a tooth pitch as "Pt", a tooth helix angle as " $\theta$ ", and a belt width of said helically-toothed belt as "W", said tooth helix angle " $\theta$ " is set in a range of

$$1 - W \cdot \tan \theta / Pt \leq 0, \text{ and};$$

compressibility of said helically-toothed belt is set to be from 1.5% to 5%.

Wujick discloses compression of the belt teeth in table I, combinations B and C being 3.4% and 3.7%, which falls in the range of 1.5% to 5%.

It would have been obvious to one ordinary skill in the art at the time the invention was made to modify the pulley and belt system of Motozaki A. et al. according to the Wujick in order to achieve a better belt and pulley configuration.

### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The reference Mohr et al. (US Pub. No.: US 2002/0119854 A1) discloses Power Transmission Drive System with helically toothed configuration.

The reference Morris et al. (US Patent 6,685,785) discloses Synchronous Drive Belt with Scaffold Stretch Fabric with similar features.

The reference Gregg (US Patent 5,209,705) discloses Synchronous Drive Belt with Oblique and Offset teeth with similar features.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAN AUNG whose telephone number is (571)270-5792. The examiner can normally be reached on Mon-to- Fri 7:30 am- to 5:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi can be reached on 571-272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

San M Aung

/Robert A. Siconolfi/  
Supervisory Patent Examiner, Art  
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